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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,439	02/08/2002	Mark R. Hueschen	10004217-1	2895
7590 04/15/2004				
AGILENT TECHNOLOGIES, INC. Legal Department, DL429 Intellectual Property Administration P.O. Box 7599 Loveland, CO 80537-0599		EXAMINER BAUMEISTER, BRADLEY W		
		ART UNIT 2815		PAPER NUMBER
DATE MAILED: 04/15/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,439

Applicant(s)

HUESCHEN, MARK R.

Examiner

B. William Baumeister

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) 8, 14 and 16-20 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-7, 9-13 and 15 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/12/2002.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of invention IB in the response received 1/26/2004 is acknowledged.
2. The traversal of the restriction between inventions I and II is on the ground(s) that the combination as claimed does require the particulars of the subcombination as claimed for patentability. This is not found persuasive because although applicant argues that novelty lies in the structure of the subcombination as set forth in claim 5, applicant has not shown or admitted that no additional novelty lies in the combination as claimed in claim 16: the p-intermediate-n tunnel junction (the subcombination) in combination additional sandwiching n and p layers in the particular order set forth. Further, applicant has not argued any errors in the example set forth in the restriction requirement as to why the combination does not require the details of the subcombination: i.e., why claims-20 are not generic to the three species IA-IC.

Applicant further asserts that subclasses 25 and 9+ are overlapping classification categories, but has not argued that the overlapping searches required for a tunnel junction and a tunnel junction integrated with a light emitter would be identical.

3. Regarding the species restriction, applicant has argued that a majority of the claims are generic. While the generic claims will be examined with whichever species is elected, the number of generic claims present has no bearing on whether the species themselves are independent and distinct.

Applicant further argues that a search of the three species would not constitute an undue burden because a search of the generic claims would equally likely turn up prior art relating to

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each of the species, but applicant has not argued why a search of the elected species would equally likely turn up prior art relating to the non-elected species, and applicant has not admitted that the species are obvious over each other. Further, MPEP 808.01(a) makes it clear that when species are independent (as in the present case), it is not necessary to show a separate status in the art or separate classification.

Accordingly, the requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-7, 9-13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Takayama et al. '676.

a. Takayama discloses DH-LEDs composed of second and third or (n-type and p-type, respectively) GaN clads sandwiching an InGaN active layer. (see e.g., ABSTRACT, and col. 6, line 48-col. 7, lines 9). The InGaN active layer has a thickness set within 1 and 10 nm (e.g., FIG 6 and col. 5, lines 65-). The clad thicknesses are each on the order of 2 μ m (e.g., col. 7, lines 1-9), and therefore are wider than the polarization and space charge regions that will necessarily be formed in each. As such, Takayama discloses a heterostructure that is capable of functioning as tunnel junction, as claimed.

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- b. Regarding the dependent claim 2, Applicant acknowledges in the present specification that setting the intermediate layer to a thickness on the order of 10 nm or less enables charge carriers to tunnel with the current density claimed (see e.g., page 5 of the Specification, second paragraph).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

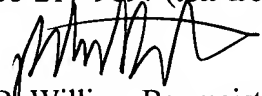
- a. Corzine et al. '082 teaches various GaN-based reverse-biased tunnel junction structures in combination with LEDs.
- b. Morizuka '133 teaches GaN tunnel diodes.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. William Baumeister whose telephone number is (571) 272-1722. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


B. William Baumeister
Primary Examiner
Art Unit 2815

April 12, 2004

**WILLIAM BAUMEISTER
PRIMARY EXAMINER**